CRAGIST
C/O DONALD S. LAMBERT
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CRAGIST: Cedar Rapids And Greater Iowa Sinclair Timex.
First meeting January 19th 1986.

The February 12th meeting came to order with the arrival of Jeff - Terry and Mike had called to state they would be late. Gary was working overtime. Don had his T/S 2068 with Larken Disk I. F. powered up and was running with a DS DD 40 track drive on DD 0 and a pair of DS QD 80 tracks on DD 1 & 2. Don had less than a week of practice to acquaint himself with the Larken DD IF. The SnapShot (NMI) SAVE was demonstrated. Mike reported he had a problem with his camera/kite project. The R. F. put out by the CPU of the kite computer locked up the receiver. He had tried to shield the computer to no avail.

Next meeting March 12th at Don's house at 1:30.

RECEIVED FIVE CALLS FROM THE AD IN THE CREDIT UNION BUY AND SELL.

T/S 1000 with two ram paks $25.00, may not have other accessories. Virginia Harlow (319) 362-8821

T/S 1000, ram pack and printer. Wants to negotiate with buyer. John Byerly (319) 395-9060

T/S 2068 Collins 395-3501, Scott Shafer (319) 362-6472 SOLD: Terry bought this.

T/S 1000 and ram pak may have bad keyboard. Jim Wehr (319) 396-7471

T/S 1000 (no accessorries) and ram pak. Software: Loan Amortimiser, Super Mathe, Starter, Check Book Manager. Pete Bergen (retired from Collins) (319) 365-9250

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CORRECTION TO BATTERY BACK UP ARTICLE (January 1989 CRAGIST)

After the Newsletter had been mailed I discovered that the gel cell battery had discharged to less than 5 volts and would not recharge. After much head scratching I realised the the 7805 regulator was the culprit and reading I found one place that stated that a 7805 not outputing to a load will draw 8 ma. Not much but it will discharge a gel cell beyond the point of being recharged. To prevent this disconnect the gel cell battery when not in use. Also a vlotmeter across the battery will eventually discharge the gel cell battery if left connected.

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MAKING PROGRAM LENGTH CASSETTE TAPES

by

DONALD S. LAMBERT

The idea started out with a cassette of programs on a mailing list of a User's Group. You were sent the cassette and when you got it copied (there was supposed to be a time limit) and added a program if you had one and sent it to the next person on the list. The theory was great but due to the problems of various people the tape seldom made it back to the User's Group. But in my case various problems prevented me from SAVEing/LOADing successfully more than a few of what could have been great programs.

And my problem was complicated by the fact that the tape recorder that got the most consistant LOADs did not have a tape counter; so if the third program on the tape failed to LOAD the first time it was a case of typing in the program name (if known) and waiting through several possibly long programs and then if it didn't LOAD you weren't sure if you had passed that program yet. Also, once I got a successfull LOAD I would move it to a cassette with that program on both sides so as to not have that multiple program tape hassle. But even using a 30 minute tape makes a lot of waste tape and you still have to wind to either the beginning or to the end to be ready to LOAD the next time and that wasted more time. So I muttered and fumed but I had programs that LOADed successfully.

I was at a garage sale (I stopped to check out some straight backed chairs) and I saw a pile of cassettes and there was no price so I asked for a lot price and it was cheap per cassette so I had some cheap stuff to work with. I had no idea of what to do with them - just a desire to use them for a better way than I was currently using. Later, I was browsing in a Radio Shack store and I saw a plastic gadget that could be slipped onto a 1/2 inch piece of wood and a cassette could be mounted on it and when you turned the crank you could spool the tape from one spool to the other inside the cassette but it was one turn of the handle to one turn of the spool. I saw a possible use for it so I bought two plus a tape splicing kit for cassette tape and got some small pieces of 1/2 inch pine at a lumber yard.

I mounted the two plastic winders and the splicing kit on the frame I made out of the wood and clamped it to a typing table and now I could take a cassette with doubtfull tape on it pull out the tape completely and cut it at the leader/magnetic tape splice and splice in the good tape and crank for what I hoped would be the proper length, cut the tape and then splice it to the other leader and have a shorter tape. It worked however the splice wasn't neat in appearance and occassionally it wanted to stick to the tape below it on the spool and still if I guessed wrong I had a tape that was too short or too long.

Logic said that if it takes four minutes to LOAD a program then it will also take 4 minutes to SAVE it too. So if I timed the LOADing of that program I could put a blank cassette in a recorder and run it that long plus a little extra for safety cut the tape and wind it into finale cassette after splicing and have a program length tape. So I would sit there winding the

hand crank while running the tape through a bit of a tape cleaning cloth to maintain a little pressure on the tape. The system worked and only had a few flaws - the splice would once in a while hang up in the cassette; the tapes had leaders; and finally the worst flaw - it was very time consuming.

I found I had to anchor the ends of the cut tape to the cassette shell with Scotch tape to prevent the leaders and or the tape from being lost into the cassette. After I had four or five such accidents I finally took a cassette apart, about half the yard sale cassettes had screw construction and the other half were sealed plastic. Of the two I took apart, the spools were of different construction. One had a notch with what looked like a tiny piece of tubing had been stretched to insert and hold the tape in place and the other had a plastic segment that snapped in place to retain the tape.

And about then I discovered that the tape I was using to SAVE on sometimes was marginal. I had better quality tape so I tried that and it was a better SAVE. And the better tape was in a screw together cassette. And while an idea was flickering in my mind I did a survey. I had cassettes that screwed together from seven different manufacturers. I carefully opened each and laid them out without mixing parts. Being an inspector at Collins Radio (mechanical and sheet metal inspector) I got out my worn retired micrometer and started measuring the spools of the cassettes and made a chart of the dimensions. And found the physical dimensions: outside diameter, thickness, clearance for the central flange of the cassette shell - all were so close to the same that I concluded that a spool from cassette A would work in any of the other cassettes so long as the spool with its mating segment retainer were used as a pair.

So I started putting the take up spool in the supply tape cassette assembling the cassette again and SAVEing the program and cutting the tape and putting the SAVEd portion of the tape in the other cassette and reassembling the retainer to the spool and then reassembling the cassette. But I ran into problems of centering the tape on the width of the cassette spool and also once in a while of droping the whole unassembled cassette on the floor and trying to find all the pieces. But I had program length cassettes but at the expense of frustration from the fumbling. What I needed was a fixture to hold everything.

About this time I aquired a pair of T/S 2020 cassette recorders and built a caddy so I could use them both at the same time and went to battery power on the SAVE machine to get reliability on the SAVEs and I built a LOAD meter/speaker loading aid to monitor the LOADs.

Suddenly I saw what was needed and how to build it (see enclosed drawing) One thing that I don't have incorporated in the design yet is a pair of plastic cups to hold all the little parts until the cassettes are reassembled. The cups could be fastened on with double adhesive tape. The board has room for both the cassette for the supply tape and the cassette being made the dedicated program cassette and the bolt to hold the spool that is to be fastened to the end of the tape. The notched out space is for the bulge at the working part of the cassette so that

the edge of the tape when it is fastened to the spool will be in the same plane. The nut holds the spool securely so that the plastic retainer can be snapped in place.

The bolt that holds the spool securely is a 5/16 bolt the threads are not critical except that you have to have a nut to fit the bolt. Take along a cassette so that you can be sure that the bolt will go through the sprocket holes in the spools. If the bolt is loose in the hole in the board use glue. I don't use a wrench on on the nut - finger tight has been tight enough.

The four wood dowels (5/16 inch diameter) that are used to keep the spools in place have to be reduced in diameter to slip easily into the sprocket holes of the spools. I inserted the dowels in the board marked the projection and chucked the end that was in the board in a 3/8 hand drill and with the drill running held a pad of sand paper against the dowel and reduced the diameter till the spool slipped easily over the dowel. The dowels were glued to the board when all other work was done on the board.

I used 1/2 pine board, 6 by 11 long but a 8 by 11 long would be better, for the base board but any wood would work. I marked the spot for the depression after temporarily inserting the dowels and putting a cassette over the dowels and used a wood chisel to cut the depression 1/8 inch deep. An alternate construction would be to fasten an identical sized piece of 1/4 inch plywood to the base board with wood screws and after drilling the holes and marking the depression cutting the depression out of the plywood with a coping saw. If that route is taken, you could cut two or more circular cutouts to be used for the small parts retainers. Actual size and layout can be modified to suit the user. I put self-sticking cushion feet under the board to keep it from sliding around and to clear the bolt head.

The difference between 60 minute tape and 90 minute tape is the thickness of the tape, usually the base material is much thinner on a longer play tape. I measured the three tapes: 60 minutes is 1 mil (.001) thick, the 90 minutes tape is .6 mil (.0006) thick and the 120 minutes tape is .4 mil (.0004) thick. And a thinner tape means it will be more suceptable to stretching and stretching will change the timing of the signals from the recorder and that might make a computer loose its place and default the LOAD.

At this point I had best get some definitions established before I thoroughly confuse you. Lay a cassette down with the portion of the cassette that has the bare tape showing facing you and we will call that the front. The Part of the cassette facing away from you is the back. And with the cassette laying with the five screws facing up is the top side and the opposite side facing down is the bottom. In that position the left spool is the feed spool and the right spool is the take up spool. The top side is the side that will be used to record the first side of the program. And with the top side up and the opening with the tape that the recorder will work on facing you the supply spool will be on your left and the take up spool on your right. Working that way is the only practical way of making the backup copies without loosing your sanity while trying to remember which side

Disassembly and reassembly: With the cassette with the screw heads up, use a Phillips screw driver to remove the screws (my screw driver is magnetic enough to pick up the screws and doesn't seem to erase the tape). With all the screws out, I usually have the cassette in my hand, gently try to separate the two halves at the tape opening and when it separates and you can lift the top off of the bottom shell half and with the tape opening facing you rotate the top half away from you and lay it down. If the lubricated paper didn't stay with the top half lift it with tweezers and rotate it the same way and lay it on the open top half. Now set the cassette on the board with the dowels going through the spools. On the first few cassettes eye the way the tape is routed till you have it firmly in mind. Reassembly is the reverse except that before you put the top on you must be sure the tape is in the proper place. An aid to controlling the tape is to keep the tape from having any slack in it by gently turning the supply spool to take up the slack with a finger tip. When the top is in place look to be sure the tape is still in the proper place and turn the take up spool a turn or two with a finger to see if the tape is free. You will find that static electricity will make the tape "float" away from the cassette shell.

Now the step by step proceedure. I first open up and strip out the tape from the cassette that I am going to put a program in. If it is tape that is no good I lift out the take up spool with the no good tape on it and push the retainer off to the side of the spool and lay the retainer and the spool in that cassette's parts place and then lift the supply tape spool out. If that is tape I am going to discard I push on the spool while holding the tape and if it isn't wound too tight it will push off at the spool and then you can slide the retainer off and put the retainer and the spool in the keep place and toss the tape in the wastebasket. I place one of the spools on the bolt and snug the nut up on the bolt. I lay the cassette to one side.

I open up the cassette that is to be the supplier of the tape for the program and lay it in the position next to the bolt and remove the take up spool and lay it and the retainer aside and run the tape by the spool on the bolt and press the retainer against the tape and into the notch for the retainer and with the end of the retainer nearest the supply tape started first press on the retainer till it snaps in place. Holding the tail of the tape with tweezers cut the tape tail next to the spool with an exacto knife and after removing the nut place the spool in place in the cassette and position the tape and lay the lubricated paper and the top half of the cassette in place and replace the one screw that is in the center of thicker part of the cassette. The other screws do not need to be replaced now.

With your finger or a slip on eraser on a pencil take up all the slack in the tape winding it all onto the supply spool and put the cassette in your recorder and set the counter to zero or use a timer. Get your program ready to SAVE and start the recording and I run the tape to a count of 10 on my T/S 2020 recorders and when it reaches 10 I hit ENTER and the SAVE routine begins and

I sit ready to zero the counter just as soon as the SAVE routine stops. When it stops I reset the counter to zero and run the recorder till it has a reading of 15 and I stop it. I take the

tape out of the recorder and cut the tape at the pressure pad area with a pair of scissors carefull not the damage the pressure pad or the spring that holds it in place. Open the cassette and position it in position two and place the first cassette in the first position and take the just recorded tape out and turning it over place it in the supply spool position and put that cassette's other spool on the bolt fasten the tape to it and place it in the cassette. This time when you reassemble the cassette you will put all the screws in place. If one screw strips and won't hold you can leave it out or you can try to put a tiny sliver of wood or paper in the hole and as a last resort you could use glue. Now you are ready to record the same program on the other side of the tape. After you have verified that both programs are good since you have reassembled the cassette you can remove the safety tabs and label the cassette. When you SAVE the program on the reverse side of the cassette you don't have to watch for the end since you already have a program length tape.

What tape do I use? Some of my often used programs are on 90 minute tapes- and as far as quality goes there is one brand that has lower output on LOADing and thus more possible failure on LOADing and also observable drop outs - and that is Memorex db. And besides it comes in a sealed cassette so you have to destructively open up the cassette to remove the tape and take a chance on damaging the tape. I have used the following and they are good: Sony HF60, Maxell UR 90, TDK D90, Sony LNX 90, and BASF LH-EI 60 (does have the spool that can't be reused but the output is extremely high although I had one cassette that had a drop out). I try to look over the cassettes to be sure that they have the three important factors: screws used in assembly, have the spool that has the plastic segment for tape retaining and the cassette body itself is of good quality. In purchasing cassettes for the shells to be used to reload tape into I take along a Phillips screw driver and have dissassembled a cassette at the counter to see the quality of the construction. Of course I purchased the cassette first and only once did I get static from the sales person and I just asked her who owned the cassette? I would look to see that the shells were not flimsy, that is where a lot of the cheapy manufacturers save money, in fact some even had the plastic so thin that there were holes in it and the cassette could be easily twisted and broken. Next check to see that the spools have the removable plastic segments that snap in and that the spools look smooth (I have never seen bad quality in the spools) and last look at the window where you can see how much tape is left to run. A good cassette has a solid window, either the cassette is molded of clear plastic or else the window is clear and glued in place; cheaper cassettes have no closed window and use a clear plastic friction paper to keep the dirt out of the cassette and a very few have nothing at all.

I am going to Larken disk drive on my T/S 2068 so I will not use or use as much the tape system for it but I will still use cassettes for the T/S 1000 system.